



# INTERNATIONAL DATA WEEK

**13-16 October 2025**  
**Brisbane, Australia**



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# PIDs infrastructure for open data sharing

**LIU JIA**

**Computer Network Information Center  
Chinese Academy of Sciences**



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# Background

## The UNESCO Recommendation on Open Science

The UNESCO Recommendation on Open Science (<https://www.unesco.org/en/legal-affairs/recommendation-open-science>) was adopted by the General Conference of UNESCO (United Nations Educational, Scientific and Cultural Organization) at its 41st session, on 23 November 2021. The persistent identifier is taken as the essential part of the "Open science infrastructures" as well as the one of the "Investing in open science infrastructures and services". CSTR is the global identifier for common science and technology resources, it is the committed practitioner of the global open science, fostering the PID infrastructure for open science.



9. **Open science infrastructures** refer to shared research infrastructures (virtual or physical, including major scientific equipment or sets of instruments, knowledge-based resources such as collections, journals and open access publication platforms, repositories, archives and scientific data, current research information systems, open bibliometrics and scientometrics systems for assessing and analysing scientific domains, open computational and data manipulation service infrastructures that enable collaborative and multidisciplinary data analysis and digital infrastructures) that are needed to support open science and serve the needs of different communities. Open labs, open science platforms and repositories for publications, research data and source codes, software forges and virtual research environments, and digital research services, in particular those that allow to identify unambiguously scientific objects by **persistent unique identifiers**, are among the critical components of open science infrastructures, which provide essential open and standardized services to manage and provide access, portability, analysis and federation of data, scientific literature, thematic science priorities or community engagement. Different repositories are adapted to the specificity of the objects they contain (publications, data or code), to local circumstances, user needs and the requirements of research communities, yet should adopt interoperable standards and best practices to ensure the content in repositories is appropriately vetted, discoverable and reusable by humans and machines. Open innovation testbeds including incubators, accessible research facilities, open license stewards, as well as science shops, science museums, science parks and exploratories, are additional examples of open science infrastructures providing common access to physical facilities, capabilities and services. Open science infrastructures are often the result of community-building efforts, which are crucial for their long-term sustainability and therefore should be not-for-profit and guarantee permanent and unrestricted access to all public to the largest extent possible.

(e) Federated information technology infrastructure for open science, including high-performance computing, cloud computing and data storage where needed, and robust, open and community managed infrastructures, protocols and standards to support bibliodiversity and engagement with society. While avoiding fragmentation by enhancing the federation of existing open science infrastructures and services, at the national, regional and international levels, attention should be given to ensuring that this infrastructure is accessible for all, internationally interconnected and as interoperable as possible, and that it follows certain core specifications, notably the FAIR (Findable, Accessible, Interoperable, and Reusable) and CARE (Collective Benefit, Authority to Control, Responsibility and Ethics) principles for data stewardship. Technical requirements specific to every digital object of significance for science, whether a datum, a dataset, metadata, code or publication, should also be addressed. The capacities of data stewardship infrastructures should serve the needs of all scientific disciplines in an equitable way, regardless of the volume and nature of data they use and the methods they employ to process it. Open science infrastructures and services should be oriented towards the needs of scientists and other audiences using them, develop functionalities tailored to their practices and present user-friendly interfaces. Due care should also be given to **persistent identifiers of digital objects**. Examples include the definition and attribution of open persistent identifiers as appropriate for each type of digital object, the necessary metadata for their efficient assessment, access, use and re-use, and proper stewardship of data by a trusted regional or global networks of data repositories.

# Background



A variety of PIDs are being used in  
open data sharing



PMID: 28339860



[arXiv:2111.06845](https://arxiv.org/abs/2111.06845) |



Bibcode: 1974AJ....79..819H ?



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# What is CSTR

## CSTR

**C**ommon **S**cience and **T**echnology **R**esource



- Based on the National Standard

GB/T 32843—2016

"Science and technology resource identification "

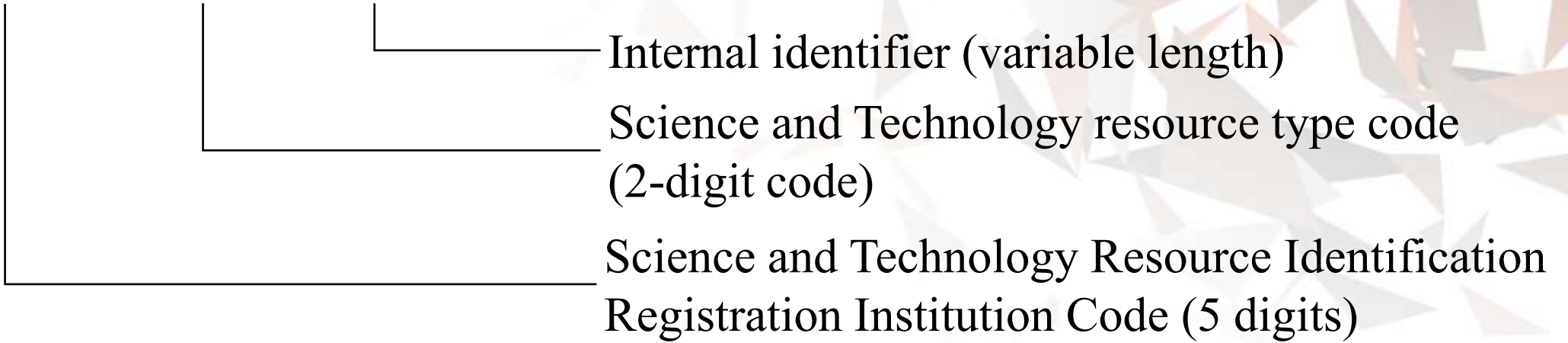
**China National Standards**



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# CSTR Numbering Specification

CSTR: XXXXXX . XX . XXX ... XXX



## ◆ Example:

**CSTR:31253.11.sciencedb.170.25**

- *"31253" is the Registration Institution Code*
- *"11" is the Scientific data code*
- *"sciencedb.170.25" is the internal code.*

# Resource Type

CODE	NAME	EXPLAIN
02	Major Science and Technology Infrastructure	Major science and technology infrastructures include large and complex scientific research systems that provide the means to explore the unknown, discover the laws of nature and achieve technological change at the limits of research
04	Plant germplasm resources	Plant genetic diversity resources are the genetic carrier materials formed by all plant genes in a specific ecological space and time.
11	Scientific data	The collection of primitive and basic data accumulated in scientific and technological activities of human society or acquired in other ways to reflect the nature, characteristics, and changing laws of the objective world, as well as all kinds of data systematically processed and sorted according to the needs of different scientific and technological activities.
14	Papers	Types of Papers include journal papers, conference papers, dissertations, etc.
16	Patents	Types of patents include invention, utility model and design patents
17	Standards	Types of standards include international standards, national standards, industry standards, local standards, corporate standards, group standards, etc.

# Our Beliefs



## Free to have

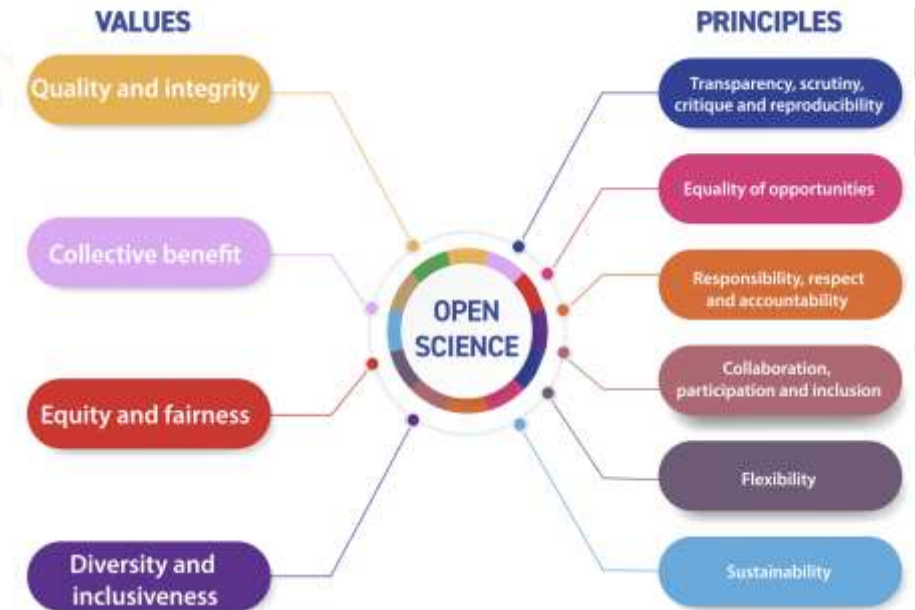
Each institution in the research ecosystem should have the right to use the global identifier for their research output without restrictions on charge which will not ignore any new emerging scientific innovation items resources. CSTR members can keep their own exclusive prefix simply by filling out the application form for free.

## Easy to use

It will take a long time to build a globally interworking and well-known identifier and to use the maturity identifier without restrictions. CSTR supports basic services both human and machine-readable to keep the identifier persistent for members without many commitments.

## Digital and Physical

The new challenge with the data-driven scientific research paradigm is not the lack of identifiers for digital research outputs but how to support the connective between the digital and physical world. CSTR provides a service that automatically traces the research impact downstream from physical to digital.



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# CSTR Identification Platform

CSTR Identification Platform (<https://www.cstr.cn/en>) is initialed in 2018 based on the National Standard GB/T 32843—2016 "Science and technology resource identification", providing unique identification service for global scientific data, papers, scientific institutions, researchers, scientific instruments, patents and other scientific and technological resources. CSTR is also accepted as the international standard, such as IANA., etc.

The screenshot shows the CSTR Identification Platform website. The header includes the CSTR logo and the text "Common Science and Technology Resource Identification". Navigation links for "OUR SERVICE", "COOPERATION", and "ABOUT US" are present, along with language options "EN" and "中文". The main banner reads "Together for Open Identifier, Together for Open Science" and features a search bar with a dropdown menu set to "Publications". Below the banner, a row of statistics displays various resource counts: PUBLICATIONS (212,943), SCIENCE DATA (18,851,610), DISSERTATIONS (221,262), PREPRINTS (78,288), PATENTS (338,197), SPECIES (484,956), LARGE RESEARCH INFRASTRUCTURES (401), INSTRUMENTS (152), GERMPLASMS (176,127), and RESEARCHERS (1,505,598). A section titled "New Data" shows updates for Science Data (3568), Preprints (229), and Publications (120) as of 2025-09-17. The "Newest Cited" section lists a citation from CSDC | Google Scholar regarding railway track data, dated 2025-08-12. The "Newest Registrations" section lists two experimental crystal structure determinations from the Cambridge Structural Database, dated 2025-09-18. The "Newest Resolutions" and "Most Cited" sections are partially visible at the bottom.



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# Service/Citation



## nature climate change

Article | Published: 22 June 2023

### Universal temperature sensitivity of denitrification nitrogen losses in forest soils

75. Ran, Y. *Plant Functional Types Map in China* (NCDC, 2019);

<https://cstr.cn/11738.11.ncdc.Westdc.2020.632>

## Cited by Cell / Nature / Science

3

## scientific data

[nature](#) > [scientific data](#) > [data descriptors](#) > [article](#)

Data Descriptor | Open Access | Published: 16 August 2022

### A bankfull geometry dataset for major exorheic rivers on the Qinghai-Tibet Plateau

31. Ren, H. & Pan, X. Integration dataset of Tibet Plateau boundary. *National Tibetan Plateau Data Center* **CSTR: 18406.11.Geogra.tpd.270099**, <https://doi.org/10.11888/Geogra.tpd.270099> (2019).

## nature communications

[nature](#) > [nature communications](#) > [articles](#) > [article](#)

Article | Open Access | Published: 01 March 2023

### Non-monotonic changes in Asian Water Towers' streamflow at increasing warming levels

65. Zhang, Y., Ren, H. & Pan, X. Integration dataset of Tibet Plateau boundary. <https://cstr.cn/18406.11.Geogra.tpd.270099> (2019).

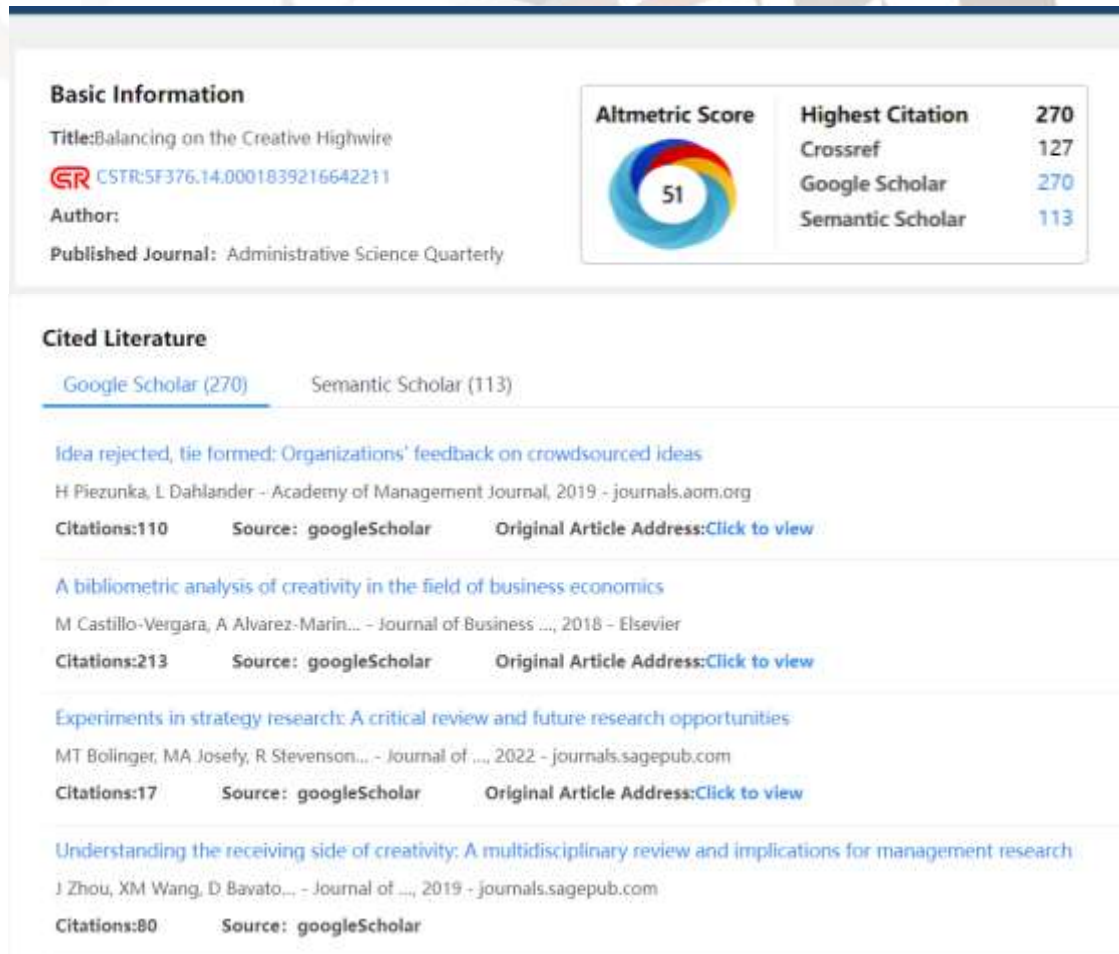


# Service/Reports

## Regular User Citation Reports



## Multi-Channel Citation List



# CSTR Statement

## Global connectivity of CSTR

With other PID services, we support due care given to persistent identifiers of digital objects proposed by Open Science Recommendation.

**11 type**

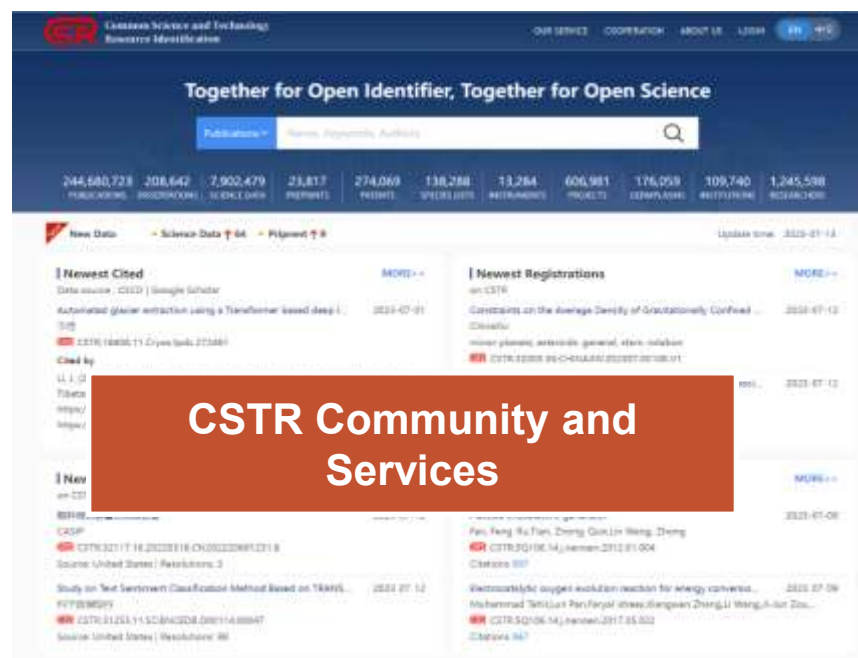
*(academic paper , patent, Scientific data...)*

**International Cooperation**

*(IANA,FAO,ORCID Harvard...)*

**Citation by Journals**

*(Nature, IEEE, Earth System...)*



The screenshot shows the CSTR website with a header banner that reads "Together for Open Identifier, Together for Open Science". Below the banner are statistics: 244,680,728 PUBLICATIONS, 308,642 RESEARCH DATA, 7,902,479 PREPRINTS, 21,817 PATENTS, 274,069 SPIES (S), 138,288 RESEARCH DATA, 11,284 PROJECTS, 606,981 CITATIONS, 176,059 RESEARCH DATA, 109,740 RESEARCH DATA, and 1,245,598 RESEARCH DATA. The main content area shows "Newest Cited" and "Newest Registrations" with search results.

**CSTR Community and Services**

**Accepted by international standard**



**IETF IANA**

**Accepted by United Nations**



**FAO**

<https://qlistest.planttreaty.org>

**Accepted by international organization**



**ORCID**

<https://pub.orcid.org/v3.0/identifiers>



The screenshot shows the CSTR website with a header banner that reads "出版商、国家数据中心、公共服务平台/存储库". Below the banner are statistics: 244,680,728 PUBLICATIONS, 308,642 RESEARCH DATA, 7,902,479 PREPRINTS, 21,817 PATENTS, 274,069 SPIES (S), 138,288 RESEARCH DATA, 11,284 PROJECTS, 606,981 CITATIONS, 176,059 RESEARCH DATA, 109,740 RESEARCH DATA, and 1,245,598 RESEARCH DATA. The main content area shows "Newest Cited" and "Newest Registrations" with search results.

**368 Institutions**

**Citation by top Journals**

# National Data Center & CAS data Center

PID service provider for

## National Data Center and CAS data Center

### National Data Center (20)

—Published by Ministry of Science and Technology

序号	国家平台名称
1	国家高能物理科学数据中心
2	国家基因组科学数据中心
3	国家微生物科学数据中心
4	国家空间科学数据中心
5	国家天文科学数据中心
6	国家对地观测科学数据中心
7	国家极地科学数据中心
8	国家青藏高原科学数据中心
9	国家生态科学数据中心
10	国家材料腐蚀与防护科学数据中心

序号	国家平台名称
11	国家冰川冻土沙漠科学数据中心
12	国家计量科学数据中心
13	国家地球系统科学数据中心
14	国家人口健康科学数据中心
15	国家基础学科公共科学数据中心
16	国家农业科学数据中心
17	国家林业和草原科学数据中心
18	国家气象科学数据中心
19	国家地震科学数据中心
20	国家海洋科学数据中心

### CAS Data Center (32)

—Published by CAS



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# National Data Center & CAS data Center

## PID service provider for National Data Center and CAS data Center



微生物目录

### 拟茎点霉属

描述: 拟茎点霉属数据库收集并整合了不同地理环境分布的拟茎点霉属样本描述信息。

关键词: 拟茎点霉属; 采集地; 形态描述

更新日期: 2020-01-06

机构: 中国科学院微生物研究所

地址: 北京市朝阳区北辰西路1号院3号

邮编: 100101

联系电话: (010) 64807462

邮箱: nmde@im.ac.cn

CSTR: <http://resolve.pid21.cn/CSTR:13913.11.micro.sdata.phomopsis>

DOI: <https://dx.doi.org/10.12210/micro.sdata.phomopsis>



### Reference way

#### Reference of data

Su, P. (2013). The annual ecological investigation data of desert vegetation with different desert types in Heihe River basin (2011). National Tibetan Plateau/Third Pole Environment Data Center, <https://doi.org/10.3972/heihe.061.2013.db>, <https://cstr.cn/18406.11.heihe.061.2013.db>. (Download the reference: RIS| Bibtext)

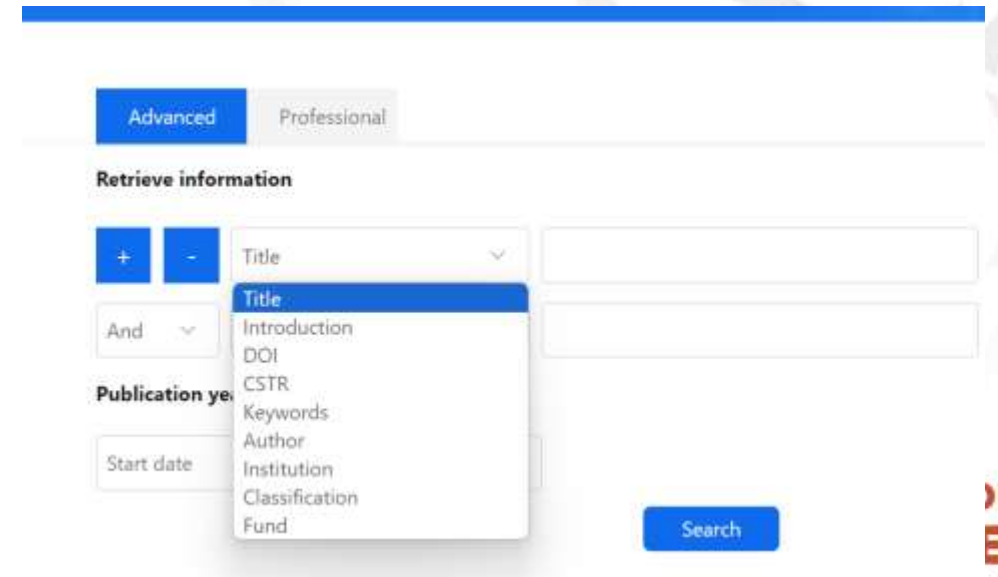


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# National Advanced Platform

## National Advanced Platform for S&T Information and Communication

Supporting various CSTR services for scientific data in National Advanced Platform for S&T Information and Communication.



<https://napstic.cn/>

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# Journal Articles

## Journal Articles

CSTR supports journals such as China Scientific Data and Frontiers of Data and Computing Development, and cooperates with publishers such as Artech Publishing Group and Chinese Medical Association.



数据与计算发展前沿 2024, Vol. 6 2: 10-24.

CSTR: 32002.14.jfdc.CN10-1649/TP.2024.02.002

doi: 10.11871/jfdc.issn.2096-742X.2024.02.002

Links, Interconnectivity, and Partnerships——30 Years of CSTNET

Li Jianhui<sup>1</sup>, ZHANG Lili, CHEN Wei, LIU Yude, LI Jingjing, MA Tongyu, LUO Ze, ZHANG Haiming, YU Ning, REN Yongmao, PEI Changhua, LI Jian, NIU Tie, ZHANG Kaichao, ZHENG Yihua



China Scientific Data, Volume 6, Issue 2: 21,86101.1/11-6035.csd.2021.0042.zh (2021) | 卷首语 | Earth Sciences

《国家重大科技基础设施子午工程专题》卷首语

魏卓思

Show more

Published: Apr 12, 2022

<https://doi.org/10.11922/11-6035.csd.2021.0042.zh>

<https://cstr.cn/32001.14.csd.2021.0042.zh>

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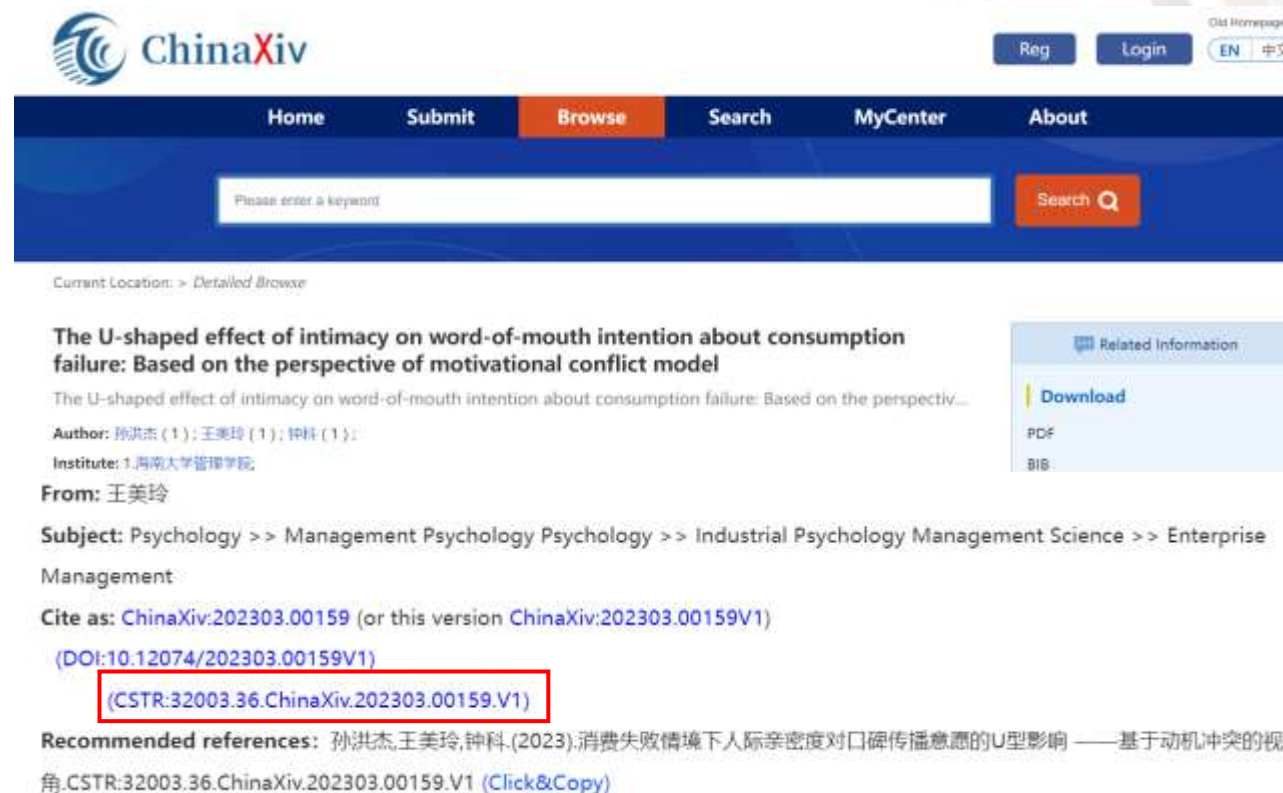


# Preprint

## Preprint

Provide CSTR registration service for preprints in ChinaXiv platform of Chinese Academy of Sciences.

Currently **78,288** preprints have been supported.



The screenshot displays the ChinaXiv website interface. At the top, there is a navigation bar with links for Home, Submit, Browse (highlighted), Search, MyCenter, and About. A search bar is located below the navigation bar. The main content area shows a preprint entry titled "The U-shaped effect of intimacy on word-of-mouth intention about consumption failure: Based on the perspective of motivational conflict model". The author is listed as 孙洪杰 (1); 王美玲 (1); 钟科 (1). The institute is 海南大学管理学院. The preprint is from 王美玲. The subject is Psychology >> Management Psychology Psychology >> Industrial Psychology Management Science >> Enterprise Management. The citation is ChinaXiv:202303.00159 (or this version ChinaXiv:202303.00159V1) with DOI:10.12074/202303.00159V1. A red box highlights the CSTR registration number: (CSTR:32003.36.ChinaXiv.202303.00159.V1). The recommended references are 孙洪杰,王美玲,钟科.(2023).消费失败情境下人际亲密度对口碑传播意愿的U型影响——基于动机冲突的视角.CSTR:32003.36.ChinaXiv.202303.00159.V1 (Click&Copy).

ChinaXiv

Reg Login EN 中文

Home Submit Browse Search MyCenter About

Please enter a keyword Search

Current Location: > Detailed Browse

**The U-shaped effect of intimacy on word-of-mouth intention about consumption failure: Based on the perspective of motivational conflict model**

The U-shaped effect of intimacy on word-of-mouth intention about consumption failure: Based on the perspectiv...

Author: 孙洪杰 (1); 王美玲 (1); 钟科 (1);

Institute: 海南大学管理学院;

From: 王美玲

Subject: Psychology >> Management Psychology Psychology >> Industrial Psychology Management Science >> Enterprise Management

Cite as: ChinaXiv:202303.00159 (or this version ChinaXiv:202303.00159V1)  
(DOI:10.12074/202303.00159V1)  
(CSTR:32003.36.ChinaXiv.202303.00159.V1)

Recommended references: 孙洪杰,王美玲,钟科.(2023).消费失败情境下人际亲密度对口碑传播意愿的U型影响——基于动机冲突的视角.CSTR:32003.36.ChinaXiv.202303.00159.V1 (Click&Copy)

Related Information

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PDF

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# Chinese Species List

## Chinese Species List

Provides CSTR registration services for species lists on the Species 2000 China node. Currently supports **484,956** species.



物种 2000 中国节点  
Species 2000 China Node



物种详细信息

接受的学名:	<i>Caridina spinipoda</i> Liang, Hong et Yang, 1990
科技资源标识	 CSTR:30689.11.colcn2022.1.04616e0e-4c21-4ad4-8bc6-26ac3c12dfdd 
中文名:	刺肢米虾 (cì zhī mǐ xiā)
异名:	-
别名:	-



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# Large Research Infrastructures

## Large Research Infrastructures

Provides CSTR registration services for Large Research Infrastructures on the Chinese Academy of Sciences Large Research Infrastructures User Service Platform. Currently supports **401** facilities and related equipment.



Intelligent Identification



Highlight visualization



Resolution to Platform  
detail page



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# CSTR Identification Gansu Node

Collaboration with the National Glacier Cryosphere Desert Science Data Center to establish the CSTR identifier Gansu node.



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# CSTR Malaysia Node

Collaboration with HSAAS(Hospital Sultan Abdul Aziz Shah) to establish a CSTR Malaysia node to support open sharing of science in Malaysia.



RECRUS Res. News! Sept 2023, Vol. 3, Issues 24: Page 736 CSTR:33294.43.032423.RECRUS.4

**Congratulations!**

**WINNERS OF RESEARCH GRANT 2023**

**FUNDAMENTAL RESEARCH GRANT SCHEME (FRGS)**

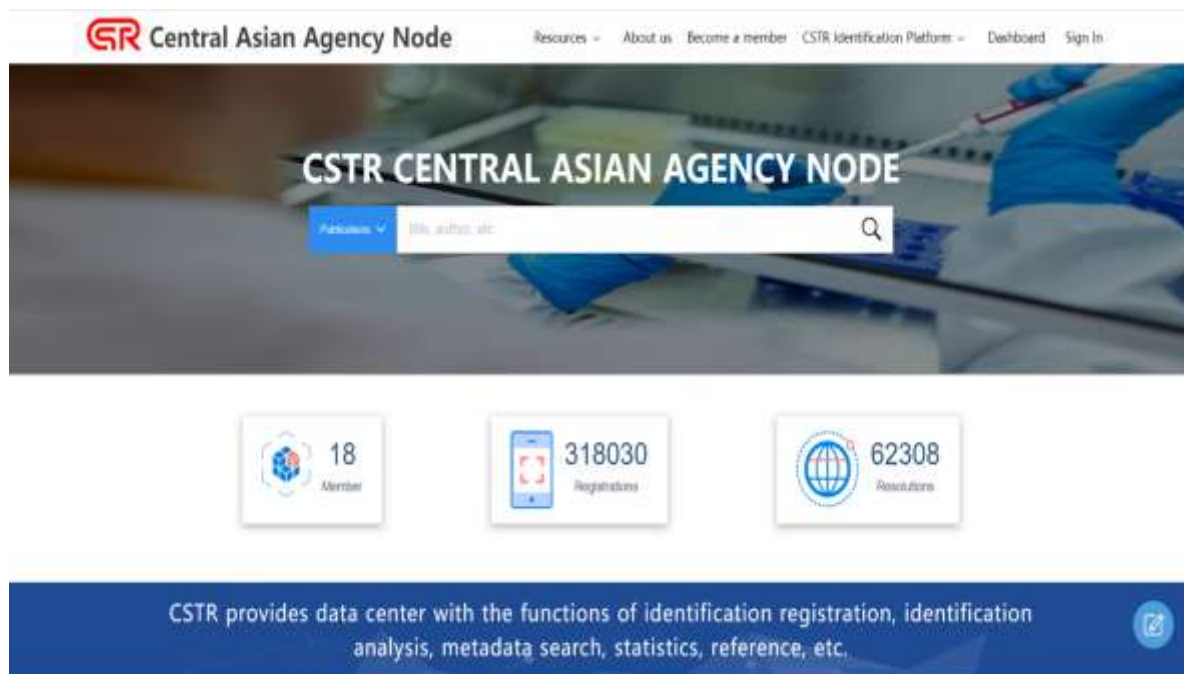
**1/ 2023**

- Breaking News
  - i. RECRUS Newsletter is now CSTR certified
  - ii. Appreciation notes to CRU Administrative Officer
  - iii. Amendments of Research Agreement Forms
  - iv. Updates from JKEUPM
  - v. Decentralised clinical trials: ethical opportunities and challenges
  - vi. ICTD 2023: Decentralised Clinical Trials - Challenges and Opportunities



# CSTR Central Asian Node

The CSTR Central Asian Node aims to provide the technology to support the development of the countries in the Belt and Road Initiative, specialized in pharmacology and biomedicine.



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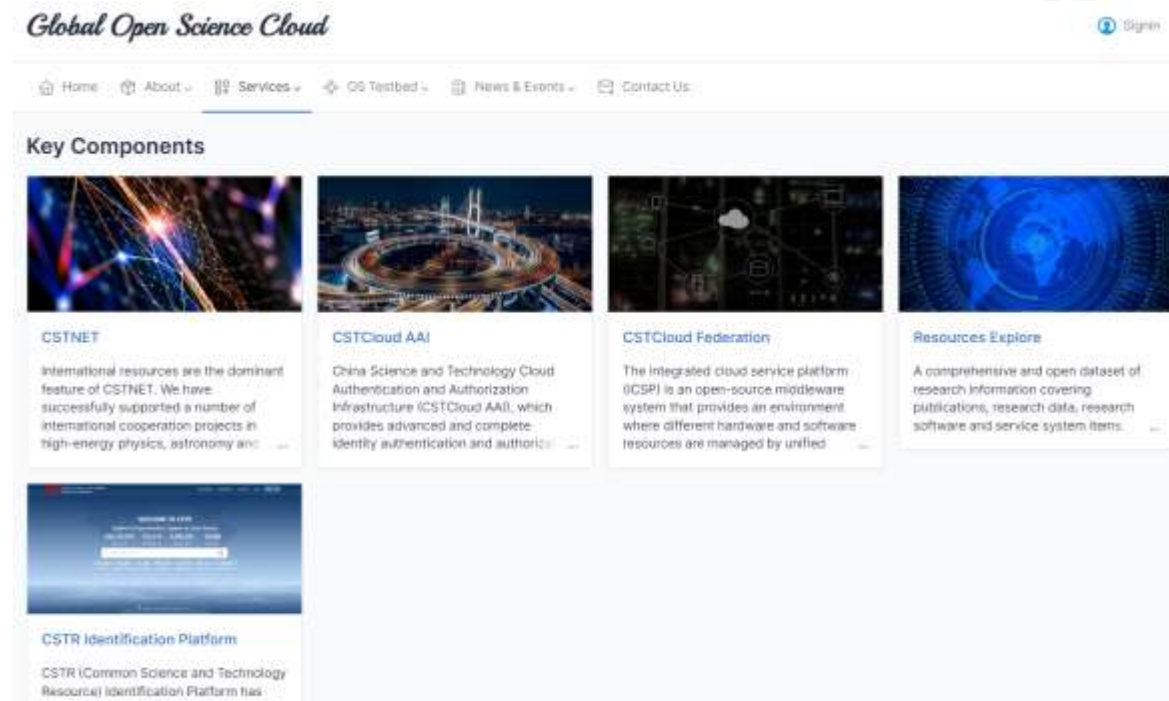


# Key Components in GOSC

## Key Components in GOSC

The Global Open Science Cloud (GOSC) aims to co-design and co-construct a cross-continental federated e-infrastructure and virtual research environment for global collaboration and open science through harmonized policies, interoperable protocols, transparent services and ongoing mechanisms. CSTR has been embraced by GOSC as a key component.

<https://goscloud.net/>



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# International Cooperation/Workshop

The International workshop on Open Science Identifier  
(17 Oct – 18 Oct 2023, Beijing, China)



IDW 2023: A Festival of Data,  
(23–26 October 2023, Salzburg, Austria)



March 20th 2023co-located with the RDA  
20th Plenary Meeting

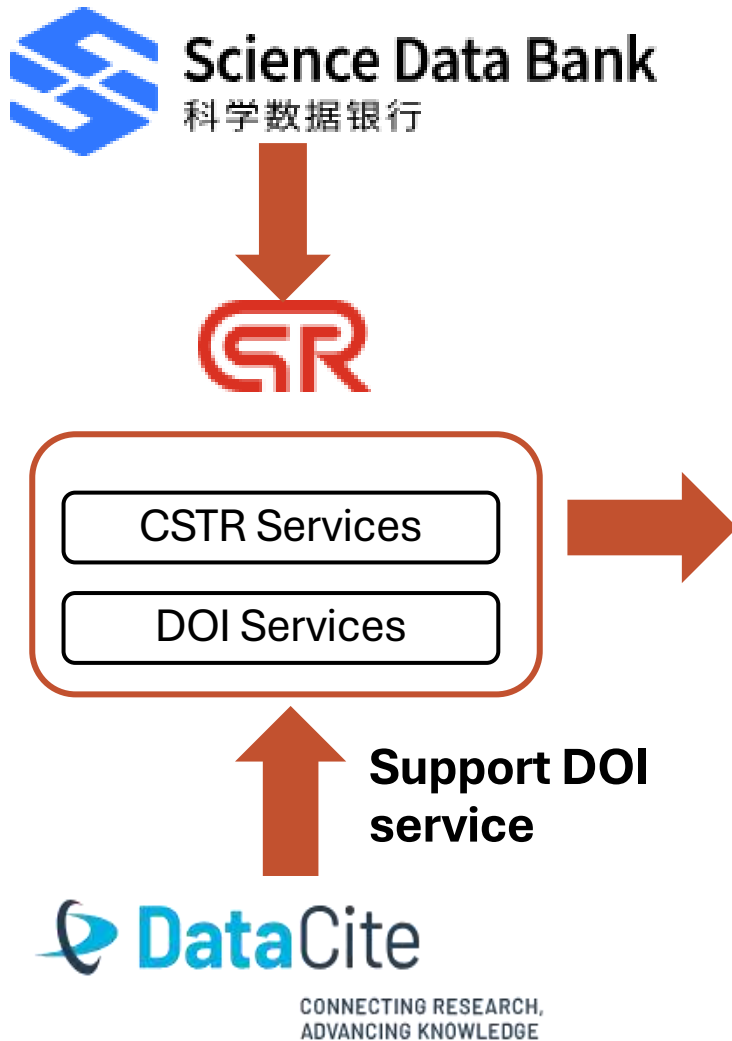


PID Fest,  
(11–13 June, Prague, Czechia)



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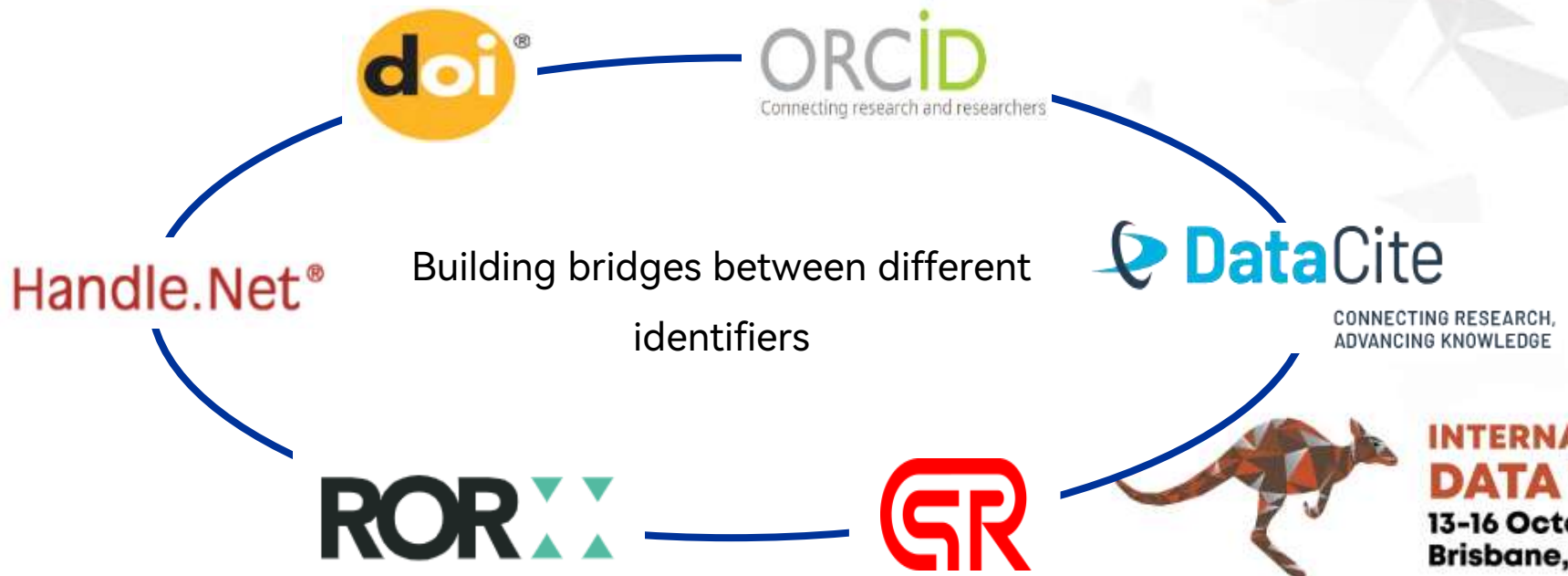
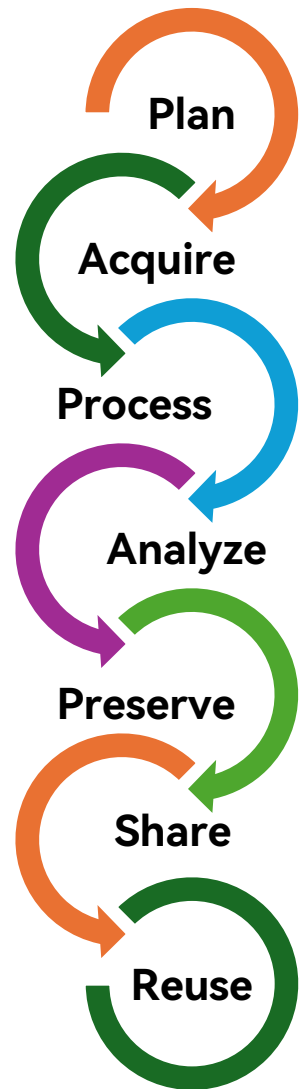
# Double Identification with Datasheets



The screenshot shows the Science Data Bank website interface. The header includes the logo, navigation links (Home, Browse Data, Data Community, Our Partner, Help, About), and buttons for "Log in" and "Submit data". The main content area displays a dataset titled "Online questionnaire data of CME of RDs among emergency physicians". The dataset is marked as "PUBLIC" and published on "2024-06-04" under a "CC BY-NC-SA 4.0" license. A red box highlights the CSTR and DOI identifiers: CSTR 31253.11.sciencedb.09393 and DOI 10.57760/sciencedb.09393. The dataset is associated with the user "Hongbo Yang". The "Description" section states: "online questionnaire data of continuing medical education on the knowledge and attitude of rare disease among emergency physicians". The "Keywords" section includes "medical education", "rare disease", and "questionnaire". The "Subject" section includes "Clinical medicine". A "Recommended datasets" section lists related datasets: "Zhihu Community Q&A Dataset on Internet Medical, Disease and Public Health Topics", "Q&A; Zhihu; Internet Healthcare; Diseases; Public Health", "Scientific data publishing survey", and "Scientific data published scientific data; survey".



# Double Identification with Research Workflows



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# CSTR with files

CSTR supports large-scale registration of scientific data files (up to tens of millions) using, while establishing an intelligent file-dataset.

## Files

<https://cstr.cn/31253.11.sciencedb.28554.01ABAA6C>

The screenshot shows the CSTR file page for the file 'ARS-2025-1168 Western Blot for three repeats.docx'. The file is highlighted with a red box. Below the file name, it states 'This file is part of Antihypertensive agent Captopril alleviates NaClO-induced lung epithelial injury, V1'. The file is associated with the CSTR ID 31253.11.sciencedb.28554.01ABAA6C. The authors listed are Wenti Li, Jawei Li, Gaihua He, Minjie Shi, Weihua Yu, Zhengpeng Fan, Changyan Wang, Rui Liu, Daqin Kong, Wenjun Li, and Jiansheng Liu. The data file information table shows the file size as 10.54 MB and the upload time as 2025-09-22.

Data File Information	
MD5:	471b917b523c6b2b1f0222105e48
Type:	docx
Volume:	10.54 MB
Upload Time:	2025-09-22
Publication Time:	2025-09-25

## Related datasets

<https://cstr.cn/31253.11.sciencedb.28554>

The screenshot shows the CSTR dataset page for the dataset 'Antihypertensive agent Captopril alleviates NaClO-induced lung epithelial injury'. The dataset is highlighted with a red box. The dataset is associated with the CSTR ID 31253.11.sciencedb.28554. The authors listed are Wenti Li, Jawei Li, Gaihua He, Minjie Shi, Weihua Yu, Zhengpeng Fan, Changyan Wang, Rui Liu, Daqin Kong, Wenjun Li, and Jiansheng Liu. The description of the dataset is: 'Bronchial asthma with acute or chronic lung injury is emerging as a critical public health concern following the wave of extensive application of the disinfectant sodium hypochlorite (NaClO) during the COVID-19 pandemic. Captopril, an antihypertensive agent, is shown to relieve symptoms, elucidation of the mechanism of captopril-mediated protection will pave the way for inventing more effective therapeutic approaches. This study investigated the mechanism of the Captopril protection in NaClO-induced lung injury. Captopril significantly inhibited NaClO-induced apoptosis and suppressed intracellular reactive oxygen species (ROS). These resulted in the reduction of oxidative products malondialdehyde (MDA) and oxidized glutathione (OSG), while upregulating the expression of antioxidant enzymes. Captopril also attenuated the levels of pro-inflammatory cytokines in BEAS-2B cells. Furthermore, captopril decreased the overproduction of mitochondrial ROS and alleviated the NaClO-induced elevation of mitochondrial membrane potential. Notably, the protective effects of captopril persisted in angiotensin-converting enzyme (ACE) gene-knockdown BEAS-2B cells, indicating an ACE-independent mechanism. Captopril markedly alleviated NaClO-induced pulmonary injury. Specifically, captopril effectively reduced NaClO-triggered lung dysfunction in mice. Captopril significantly reduced ACE activity, while compensatory ACE synthesis was observed. Captopril inhibited NaClO-induced apoptosis by upregulating Bcl-2 and downregulating FAS, cleaved caspase-3, and Bax levels. Moreover, captopril suppressed tissue ROS generation, decreased MDA content, elevated reduced glutathione (GSH), and enhanced antioxidant enzyme expression. Captopril relieved pulmonary and systemic inflammation and regulated autophagy-related proteins to alleviate NaClO-induced autophagy dysregulation. Together, this study reveals that captopril is a powerful agent with abundant potential to relieve NaClO-induced lung injury.' The keywords listed are NaClO, Lung injury, BEAS-2B, Captopril, and ACE.

# Thank you for your attention.

## Links

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